

THE DUXBURY MARSHES—



The Bluefish River—a meandering mainstream of wild life.

Can They Survive the Small Dangers?

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**Pollution threatens
an important natural nursery
where thousands of
fish are born**

Story by Andrienne G. Clark
Photos by Wilfred G. Randall

One of the most important nurseries in Massachusetts is not located in a hospital maternity ward but in an eleven hundred acre marsh which fringes Duxbury Bay. Each year in the meandering streams of this coastal wetland, thousands of baby fish are born, many of them destined to be caught by commercial fishermen and then eventually to be served for somebody's dinner.

While most salt marshes have been destroyed by pollution or packed solid with fill to make way for huge housing developments, the marshes of Duxbury Bay, partly through

an accident of history and partly as the result of public vigilance, have managed to survive unscathed. Fortunately, with no major catastrophes threatening them in the near future, their natural beauty is likely to remain unimpaired for some time. Although safe from massive attacks on their existence, the marshes do face many insidious and subtle threats to their survival. These are the thousands of minor assaults on their beauty which can ruin them so gradually that people may not even be aware the damage has occurred until it is too late.

Many persons in the bay area are aware of this problem. One in particular who

possesses a great deal of knowledge about the seemingly minor problems which endanger the marshes is Richmond Poole of nearby Pembroke. Last year as a graduate student at Yale University, where he worked for his master's degree in environmental studies, Poole did extensive research on the marshes.

Poole is enthusiastic in talking about the marshes. To him they are not only a place of great beauty but a marvel of nature as well. He will eagerly explain that each acre of marshland produces ten tons of green matter a year—twice the amount yielded by the richest prairie lands in the United States. This makes the coastal wetlands the most productive zones on earth. While the green matter produced by marsh grasses may not be very appetizing to a human being, it is Thanksgiving Dinner to the marine life in Duxbury Bay.

What most people are unaware of is that the marshes, the ribbon-like creeks which cut through them, and the bay

form one great natural system called an estuary. Each part of the system contributes in some way to the well-being of every other part.

The marshes are the bank for the system. During the summer months, the efficient salt grasses, unhampered by too much pollution, convert the sun's energy into food. As the grasses die and decay, the nutrients contained in them are released into the creeks and are gradually washed into the bay by the tide.

Rich with nutrients, the marsh streams nurture baby fish. The mudflats provide a secret refuge for mussels, quahogs, and soft shell clams. Since nearly all marine animals live close to shore, they are dependent in some way on food supplied by the marshes. Meanwhile, back in the swampy grasslands, small animals such as muskrats and wild geese are living off the fish swimming in the streams.

What endangers the estuary system in Duxbury Bay, according to Poole, are a lot of picayune situations, each one seemingly unimportant.

"You take a guy and his two kids," he explains. They go out fishing in a motor boat and burn twenty gallons of gasoline. An oil residue is deposited on the water and it settles on the marshes. It's not much, but when you multiply it by a thousand people all doing the same thing, then this oil is a threat to the marshes."

For the marshes to survive, people have to learn to think of them as a complete system in which each part, no matter how insignificant, interacts with every other.

"What happens to a wasp can have an effect on a greenhead fly," observes Poole. "I see my marshes as a totality. To save it, it must be saved as a totality."

This fact explains why spraying to protect cranberry bogs or to kill mosquitoes can be potentially harmful to other living things in the marshes. Pesticides may kill non-target species which are useful to man right along with insects which are a nuisance to him.

Poole cites dredging and

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filling as another major threat to the marshes. "If you dredge one creek and throw the earth into another, then two creeks have been destroyed."

Waste disposal is another potential danger to the marshes. Human waste, Poole contends is not necessarily bad for the estuary if it does not exceed the capacity of the system to utilize it. In small amounts it can actually serve as enrichment. Fortunately, because the seacoast towns along the bay are resort communities, industrial waste is not a major problem.

In Poole's judgment, the present system of diversified land ownership along the estuary protects it from large-scale exploitation. About nine hundred acres of tideland are in the town of Duxbury and the remaining two hundred acres are in Marshfield. Private individuals and organizations own about three hundred acres. Such a tangle of legal problems would best anyone trying to acquire title to a large tract of marshland that

use of the area for some big project such as an airport is effectively discouraged.

Safeguarding the marshes from small encroachments is a more difficult task, however. So many of our coastal wetlands have already been ruined beyond the point of reclamation, that more than adequate protection must be given to the Duxbury marshes if they are to survive. The complimentary system of state and local protective laws have been a big factor in preserving them from serious exploitation. But laws alone are not enough. Public understanding and public vigilance are also required. "We need people who know what the law is and who are active in seeing that it is enforced," claims Donald O'Connors, a lawyer who makes his home in Duxbury.

Perhaps another way to protect the marshes is to make the public aware of how valuable they are simply because they are unspoiled. The Duxbury estuary is unique because it is one of the last such areas along the northeast seacoast that is still relatively free

of pollution. For this reason it has great value as a research site for marine biologists. It is one of the last places left where scientists can still study a marsh system in almost its original state. The location of the bay on the North Atlantic coast enhances the scientific value of the area because biologists know less about the habits of marine organisms inhabiting these waters than they know about marine life elsewhere.

One man who fully appreciates the scientific value of the Duxbury estuary is Dr. Robert E. Hillman, an ecologist who directs the William F. Clapp Laboratory in Duxbury. The Laboratory, which is a division of Batelle Memorial Institute, an independent, non-profit research corporation, recently completed a two year comprehensive study of aquatic life in Duxbury Bay.

"There is still so much we don't know, that's the problem," he asserts. Many of the questions for which Hillman is seeking answers are important to the commercial fishing

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Somebody doesn't care.

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industry. "We don't know what causes cycles of abundance," notes Hillman. "There used to be a tremendous crop of scallops in the bay. Then suddenly they disappeared. Why is one year a good year for catching striped bass and another year a poor one?"

Discovering what causes disease epidemics which afflict marine organisms in different areas is another problem of concern to him. Biologists want to know what governs these natural cycles and they wonder if man is also influenced by them.

If scientists are one day able to solve these great mysteries of nature, it may turn

out that the waters of Duxbury Bay provided them with some of their clues. Hillman explains the scientific value of the estuary in this way: "We need to establish a base line of information first. We need to know what the relationship of the organism is to its environment. The bay is a good area for that. Here we can look at a clean controlled cycle, still fairly untouched."

Because it has not been ruined by pollution or destroyed by dredging and filling, the marshland around Duxbury Bay makes an enormous contribution to the economy of the region also. Commercial fishermen annually harvest a large crop of flounder, cod and shellfish, all

of which in some way depend on the marshes for their nourishment.

The recreation industry is also depends on the wetlands. The striped bass swimming in the creeks attract many sport fishermen. They may have to buy fishing equipment at local sporting goods stores. Wild geese, stopping in the marshes on their flights north or south, lure hunters in search of wild game. They too may have to buy ammunition or perhaps hunting boots or jackets.

More difficult to assess than the economic benefits of the marshes, is their aesthetic value. "I hate to think what any coast would be like without them," exclaims Dr. Hill-

man. Natural beauty is important to the mental health of a community he believes. "That is not very scientific," he says reflectively, "but there are many scientists who intuitively feel this but don't know how to measure it."

Fortunately the citizens of Duxbury have always recognize the importance of the bay and its swamps and brooks. As far back as 1737 citizens of the town, fearing the total destruction of game,

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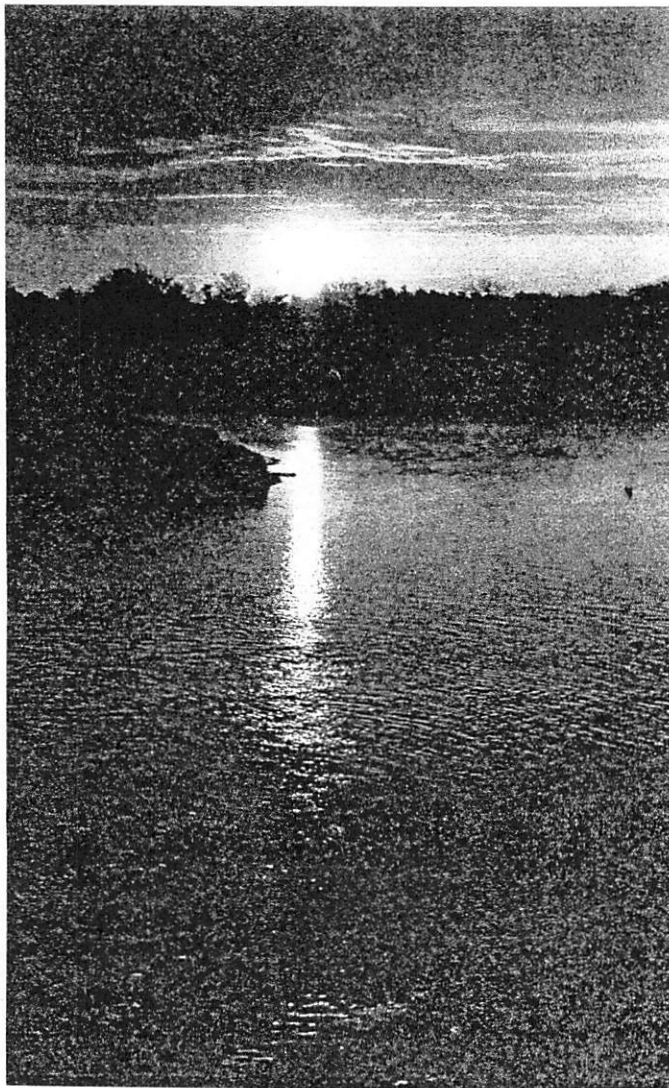
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petitioned the General Court to regulate fowling "Because ye wild fowle have almost foresaken ye said bay." Selectmen of Duxbury joined with those of Plymouth and Kingston in 1869 to designate three commissioners to "control the digging of clams and the taking of eels within the harbors of said towns." In that year also the community began the first seeding of clam beds. Later in 1898 all clam digging on a large scale was halted and flats were set aside for seeding and as a reservation to promote clam propagation.

Some years after, the Duxbury Rural and Historical Society, Inc. began to acquire marshlands and restrict dumping on them. Other property owners followed suit. Today, a new agency concerned with protecting the marshes is the Conservation Commission, which was established under a state law authorizing the creation of such bodies in order to promote and protect a community's natural resources. The commission seeks to protect the coastal marshes and the inland streams and wetlands of the bay.

That the marshes survive in their present unspoiled condition is due not only to the vigilance of the community but also perhaps because of an accident of history. During the early nineteenth century Duxbury was a thriving shipbuilding community. Then the development of the Yankee clippers and the steamships killed the industry in Duxbury. The bay was not deep enough for launching these large vessels. With the demise of the shipbuilding industry, Duxbury became a quiet seacoast village offering a haven for summer residents and tourists. The lack of industry meant that the bay remained free of contamination.

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Sunrise over the Duxbury Marsh.

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Today, the long clumps of a spongy ground, shaggy with grass, and the lazy meandering streams probably appear much the same as they did when Miles Standish first sailed across the bay from Plymouth Colony. On the opposite shore he built a summer home which he called Ducksbury in honor of his ancestral family estate in England.

The teeming life of the bay still delights and astonishes the visitor just as it did the early settlers who, in a journal of colonial life entitled, "Mourt's Relation," wrote, "This bay is a most hopeful place, innumerable store of fowle, and excellent good; and cannot but be fish in their season; skate, cod, turbot, and herring, we have tasted of; abundance of muscels, the greatest and best we ever saw; crabs, lobsters in their time infinite."

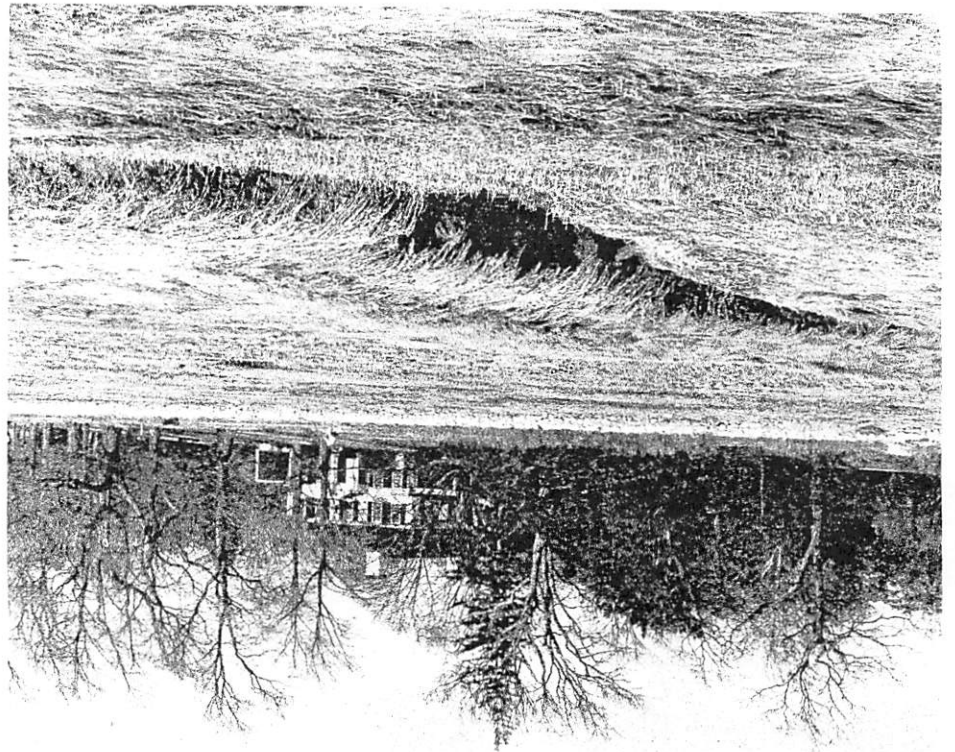
Three and a half centuries later, a newcomer to Duxbury can still gaze across the marshes, where once Colonial settlers harvested salt meadow grass for their cattle, and reach the same conclusion. Duxbury Bay is still a most hopeful place.



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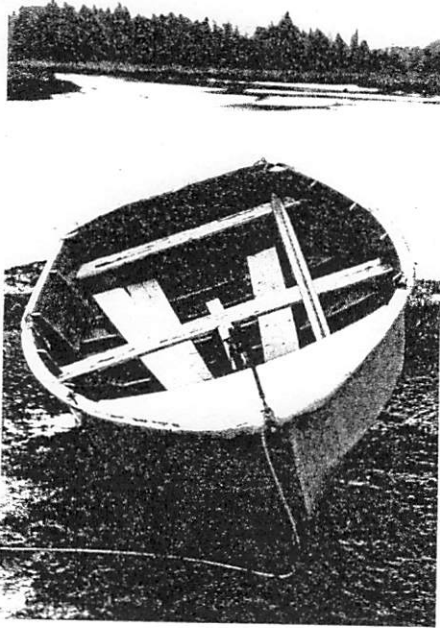
The original beauty of the coastal wetlands still survives. This colonial mansion looks much the same as it did a hundred and fifty years ago.

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This boat has seen better days.



The stump at right, gradually decaying, is part of the natural system of recycling.

